Math 102 Review for Test 1

1. Solving first-degree equations

a) $7x + 6 = 14$

subtract 6
divide 7

$7x = 8$

$x = \frac{8}{7}$

b) $6x - 3 = 4x + 1$

c) $3(x + 2) = 7(x - 2)$

expand
combine
add 6

d) $4 = 3(x - 3) + 4 - 2x$

$4 = 3x - 9 + 4 - 2x$

$4 = x - 5$

$9 = x$

2. Central University reports that 4677 men and 4982 women were enrolled as undergraduates. It also reports that 867 faculty members were employed full-time. What is the student-faculty ratio at Central University?

3 Cindy sold 9 tickets to the school play and Sarah sold 12 tickets. What is the ratio of the number of tickets Cindy sold to the number of tickets Sarah sold?

4 Which is the more economical purchase, a 12-ounce container of yogurt priced at \$2.29 or a 5-ounce container of yogurt priced at \$0.89?

\$/oz

\$2.29 / 12 oz = 0.190833 \$/oz

\$0.89 / 5 oz = 0.178 \$/oz

The 5oz one.

5 Bigtown University reports 10,555 male undergraduates, 14,742 female undergraduates, and 5128 faculty members. Calculate the student-faculty ratio at Bigtown University. Write the ratio using the word *to*.

6 Out of 630 doctors surveyed, 504 recommended aspirin therapy to their patients. Write the ratio, as a fraction in simplest form, of doctors who recommended aspirin therapy to the total number of doctors surveyed.

7 The velocity of an object is given by the equation $v = 125 - 32t$, where v is the velocity in feet per second and t is the number of seconds after the object is released. How fast will the object be moving 3.2 seconds after it is released?

v?

t = 3.2

Given

Substitute t = 3.2

$v = 125 - 32t$

$v = 125 - 32(3.2)$

$v = 125 - 102.4$

$v = 22.6$ ft/s

8 Which is $S = C + rC$ solved for r?

Subtract C $S - C = rC$

Divide C $\frac{S-C}{C} = r$

9 Solve $h = \frac{At}{b_1 + b_2}$ for A

10 The cost of a calling card telephone call is \$2.00 for the first five minutes and \$0.75 for each minute over five minutes. Find the length of a call that cost \$8.75.

11 Solve. $\frac{4}{6} = \frac{7}{x}$

Cross mult. $4x = 42$

Divide 4 $x = 42/4$

reduce $x = 21/2$

12 Solve. $\frac{4}{x} = \frac{5}{3}$

13 A consultant earns \$113,000 per year by working 200 days per year. Assuming her daily salary is the same, how much would her annual income be if she worked 250 days in one year?

14 If you travel 348 miles in your car on 12 gallons of gasoline, how far can you travel in your car on 8 gallons of gasoline? mi

Setup. $\frac{348\text{ mi}}{12\text{ gal}} = \frac{x}{8\text{ gal}}$

Cross. $12x = 2784$

Divide 12. $x = 232\text{ mi}$

15 A waitress earns \$18,600 per year by working only during the 20 weeks of the peak season. Assuming her weekly salary is the same, how much would her annual income be if she worked 50 weeks in one year?

16 Write 0.052 as a percent.

5.2 %

17 Write 7.3% as a decimal.

0.073

18 Write 1.56 as a percent.

19 Write $\frac{3}{25}$ as a percent.

calculator gives decimal $3/25 = 0.12$

12%

20 Write 24% as a fraction.

"Percent" means "/100" 24/100

reduce (divide top/bot by 4) 6/25

21 Write $\frac{3}{8}$ as a percent.

An investor received a dividend of \$28.50, which was 0.2% of the value of the investment. Find the value of the investment.

23 If you answer 32 questions correctly on a 40-question exam, what percent of the questions did you answer correctly?

24 43% of the students are from out-of-state. If there are 18,300 students, how many are from out-of-state?

25 At the start of the spring, it was estimated that 2637 fish were in the lake. At the end of the winter, a new survey was taken, and it was estimated that 3335 fish were in the lake. What is the percent increase in the population to the nearest percent?

Difference (new - old) $3335 - 2637 = 698$

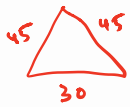
Difference / old (increase / old) $698 / 2637 = 0.2647 = 26.47\%$

26 How many square feet of tile are needed to cover a kitchen floor that is 16 feet long by 11 feet wide?

Area? rectangle

$A_{rectangle} = LW = 16 \times 11 = 176 \text{ ft}^2$

27 You want to glue a border along the edges of a pennant that has sides measuring 45 cm, 45 cm, and 30 cm. Find the length of border needed.



$45 + 45 + 30 = 120 \text{ cm}$

28 A circular carpet has a diameter of 7 feet. What is the area of the carpet? Round to the nearest tenth.

$r = \frac{d}{2} = \frac{7}{2} = 3.5$

$A_{circle} = \pi r^2 = \pi 3.5^2$

$= 12.25\pi$ exact answer

$= 38.48 \text{ ft}^2$ rounded answer

29 Find the length of baseboard molding needed to edge the bottom of the walls of a square room that is 13 feet long.

P

$P_{square} = 4s \quad 4 \times 13 = 52 \text{ ft}$

Multiple Choice Questions

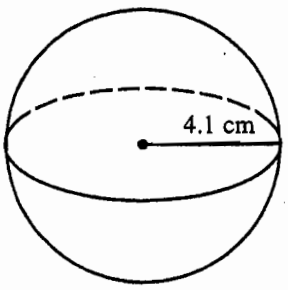
30 What is the volume of a rectangular prism with length 10.5 inches, width 7 inches, and height 4.2 inches?

a. 21.7 cubic inches
b. 73.5 cubic inches
c. 102.9 cubic inches
d. 308.7 cubic inches

31 The radius of the base of a cone is 6 inches. The height of the cone is 7 inches. What is the volume of the cone, to the nearest hundredth?

a. 43.98 cubic inches
b. 131.95 cubic inches
c. 263.89 cubic inches
d. 791.68 cubic inches

32 Find the volume of the sphere. Use $3.14 = \pi$.



A. 162 cm^3 B. 70 cm^3 C. 302 cm^3 D. 289 cm^3